Ethiopian Journal of Environmental Studies and Management Vol. 6 No.4 2013

EFFECT OF HOUSEHOLDS' SOCIO-ECONOMIC CONDITION ON CROWDING IN GOVERNMENT-BUILT APARTMENTS IN LAGOS, NIGERIA

ADEBAYO, A.K. and *IWEKA, A.C.O.

http://dx.doi.org/10.4314/ejesm.v6i4.11

Received 26th April 2013; accepted 1st July 2013

Abstract

This study evaluated how occupants' socio-economic status affect household crowding in multifamily walk-up apartments built by the government for low and medium income dwellers in Lagos, Nigeria. The focus was on Lagos State Development and Property Corporation (LSDPC) as a case study, using survey research design approach. Four large housing estates with a population of 7,764 dwelling units were purposively chosen from locations at Abesan, Iba, Ikoyi and Ebute-Metta. A sample of 7.5% (582) was selected, using systematic and stratification techniques. Pre-tested questionnaires were used to obtain responses from household heads pertaining to number of persons and demographic data for each housing unit. A return rate of 30.2% was recorded. Socio-economic grouping of households was derived using a monthly income estimate for the head of household. Households were grouped into low, medium and high income categories. Data analysis was done by applying adult-equivalent number of occupants to the Canadian National Occupancy Standards (CNOS) and the Equivalized Crowding Index (ECI). The results indicate a preponderance of gentrification, with attendant policy implications. The results also show that there is no significant difference in the degree of crowding among the different socio-economic classifications. This is inconsistent with the generally held understanding in urban housing studies that crowding rates are higher in low income households than in medium and high income households. The findings tend to suggest that LSDPC should adopt appropriate strategies to forestall the disappearance of low income households from its multifamily apartments.

Key words: *Apartments, Crowding, Household, Housing Estates, Socio-economic Status*

Introduction

Government-built housing activity in Lagos shifted from mere provision of quarters for colonial administrators to housing the growing population, with the creation of *Lagos Executive Development Board* (LEDB) now *Lagos State Development and Property Corporation* (LSDPC) in 1928 (Immerwahr, 2007; Illesanmi and Adebamowo, 2009). The initial focus of LEDB was on low income workers as evidenced by the construction of low-cost schemes in 1950s at Yaba and Surulere. One of the key initiatives of government-built housing was to bring people of different socio-economic groups closer together. The government also intended that the building of smaller flats will provide more affordable housing options for the lower-income group. As the population of Lagos became more diverse and cosmopolitan, the residents also became more affluent and better educated. Such a situation warranted scrutiny and analysis of households' socio-economic status as a factor in assessing housing needs of urban dwellers and the quality of public housing apartments. According to Bogdon and Can (1997), assessments of housing needs frequently consider three dimensions of housing problems: (i) physical; (ii) affordability; and (iii) overcrowding. Also, Le Roux et al, (2005) and Mastor and Ibrahim, (2010) provided six indicators for assessing utilization and user satisfaction in housing provisions. These are functional, technical, economic, environmental, social, and process performance indicators. The works of these authors provided a conceptual background for the present study.

The context of this study was housing estates containing large numbers of multifamily dwelling units, for low-income and medium-income urban households. The definition of large estates or large numbers of multifamily apartments in this research was not based on absolute number or benchmark. It is contextual to LSDPC, where such quantitative expressions for one estate were interpreted relative to other estates belonging to the organization. In this study, the aim was to establish how occupants' socio-economic status affects crowding in

Department of Architecture, Faculty of Environment Sciences, University of Lagos Akoka-Yaba, Lagos, Nigeria
**Corresponding author:* tonyiweka@yahoo.com

LSDPC's low and medium income apartments. The specific objectives were:

(i) To determine whether the apartments designated as low income and medium income were actually occupied by households belonging to the specific income category.

(ii) To establish the effect of socio-economic status of respondents on crowding in specific apartment categories.

The head of household or the main bread-winner of the household is considered to represent the position of the rest of the household members. This may impose some limitations on the results particularly in circumstances where the excluded components of a household's income are substantial, like in cases where a couple and children are income earners (Boehm and McKenzie, 1982).

Study Area

Lagos currently covers an urban agglomeration of 300 square kilometres, stretching from Badagry in the west to Lekki Peninsula in the East; and from Ikorodu town in the North to the Bight of Benin in the South. Currently, Residential coverage is about 52.1% of the built-up land area. Lagos is the most populous urban centre in Nigeria, and one of the fastest growing large urban agglomerations in Africa. It is estimated that an average of three people move into Lagos every hour to stay, while 60% of the population are in dire need of accommodation.

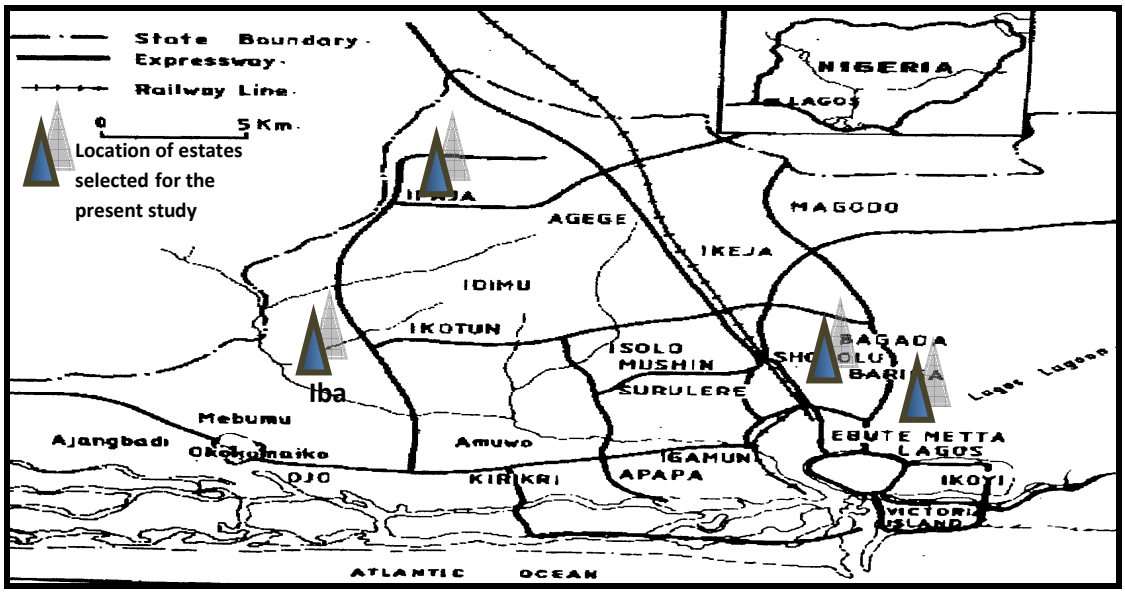

Figure1 Map of Lagos State, Nigeria

In the fifty-seven year period between 1950 and 2007, the population of Lagos grew from 300,000 to an estimated 17.0 million (George, 2008). This substantial population growth has tremendous consequences, particularly in terms of providing adequate housing for immigrants moving into the area. Mabogunje (2002) reported that the population density of Lagos is about 20,000 persons per square kilometre.

The case study areas

Low Income Housing Estate, Abesan is located along Ipaja road, off Lagos-Abeakuta express way on coordinates 6.611543500000001, 3.2689984999999524. The estate consists essentially of three basic building types that make up a total of 4,272 housing units. These basic building types consist of four floors having two bedroom apartments and three bedroom apartments. The design is quite simple and this is due to the initial purpose of the design being low cost.

Dolphin II Low Income Housing Estate is located off Alfred Rewane Road, formerly Kingsway Road, in Ikoyi area of Lagos metropolis on coordinates 6.45407, 3.436261400000035. The estate is divided into two main parts (1) the medium income housing zone, comprising semi-detached duplexes; (2) the low income housing zone. The present study is restricted to the low income housing scheme. This is a gated community consisting of apartment buildings that are four floors in height. Two apartments are on each floor, giving a total of eight per building. The apartments were built using two prototype designs: (1) 2-bedroom prototype and (2) 3-bedroom prototype.

LSDPC Low Income Housing Estate, Iba is located along the road that links Iyana-Iba to Iyana-Ipaja on coordinates 6.4898208, 3.199078399999962. Houses in the estate are block of flats which consist of three-bedroom flats. Each block of flats consists of six apartments, arranged in units of twelve per plot. The layout is grouped into seven zones with a total of 199 blocks. Overall there are 2388 dwelling units within the estate. The floor plan is a prototypical design.

LSDPC Medium-Income Housing Estate, Ebute-Metta is a medium-income estate located at the heart of Lagos Mainland on coordinates 6.4858156, 3.388172700000041. The buildings are made up of three-storey blocks, with two apartments of four-bedrooms on every floor. There are altogether sixty-six blocks of eight apartments, totalling 528. The floor plans are prototypical units.

Household's socio-economic status and crowding: Income is one of the most cited determinants for crowding. The multifamily walk-up apartments designed and built by LSDPC for low-income and medium-income households were the target of this research. The justification for limiting the study to walk-up apartments is that they are the dominant apartment type in LSDPC's staple. High-rise public housing supply by LSDPC is skeletal and not widely acknowledged as a success story. This is a sharp contrast with the situation in Singapore, where 84% of its resident population is found in high-rise apartments (Yuen *et al*, 2006).

Socio-economic grouping was derived using an income estimate for the head of household. There are arguments that people live in crowded conditions because they cannot afford larger houses. Lack of income may induce families to live with other members of the family or acquaintances. Thus, the probability of a household being crowded is expected to be higher for households headed by persons whose incomes are lower. In this study, the monthly income, derived by summing personal income for the household head, provides basic information about whether a household was low-income, medium-income or high-income. It was taken as an indicator of relative standard of living, and was capable of accounting for household composition. This allowed for comparison of household income across household types and household composition.

Criteria for socio-economic group classification: Developing a reliable and valid socio-economic group classification was of utmost importance in this study, particularly with respect to interpretation of findings. This study did not adopt the definition of low income group used in the formulation of the National Housing Policy, as it has become stale and unrealistic. The National Housing Policy defines the low income group as all wage earners and self-employed people whose annual income was Five Thousand Naira or below as of 1988, or whose annual income is twenty percent below the maximum annual income of the highest salary grade level within the Civil Service Structure at any given time, whichever is higher. Available record of the current wage structure of workers in the Federal Service of Nigeria shows that the maximum annual income of the highest salary grade level is ₦5,441,336.00. Twenty percent below this income level amounts to ₦4,353,068.80. Also, the next highest paid civil servant earns ₦2,889,373.00, which implies that all persons on grade level 16 and below are low-income. This is not a true representation of the actuality.

Fadare and Alade (2009) gave another classification of persons in these three income groups. In a study of determinants of households' trip generation in Lagos Metropolis, they classified low-income group as those who earn less than ₦50,000.00 per month. Those earning ₦50,000.00 and above, but below ₦100,000.00 were grouped as middle income, while people who earn ₦100,000.00 and above are classified as high income.

Ndubueze (2009) in a study of urban housing affordability and housing dilemmas in Nigeria, adopted the methodology used in the Nigerian Living Standards Survey to compute the monthly cash income of households. Two cash income variables were used – the regular household monthly income variable and the incidental household income variable. The regular monthly income variable includes total basic monthly income, rent received (property owners), income from subsidiary group, dividend on shares, and pension. On the other hand, the incidental household monthly income variable relates to pools/lottery winnings, sales of property, cash gift received, remittances from within Nigeria received, remittances from outside Nigeria received, and miscellaneous.

Ndubueze (2009) further adopted the criteria used in developing non-housing consumption

poverty line in Nigeria to identify and classify the income group of households. Following this criterion, the national per capita household income was computed to be ₦60,271.00. Two-thirds below this figure (₦40,180.00) was taken as the maximum cut-off point for low income group. On the other hand, two-thirds above ₦60,271.00 was used to determine the minimum cut-off point for high income (₦100,451.00). Thus, there is general agreement that high income groups are those who earn ₦100,000.00 and above. There is also an agreement in the classification of the bulk of the middle-income group. However, while Ndubueze's study fixes the maximum income for low income at ₦40,180.00, Fadare and Alade's study stipulates ₦50,000.00.

These categorizations were contextually relevant to the present research. However, the present study adopted ₦45,000.00 for the maximum low income monthly earning of head of household. Therefore the figures adopted for measurement of socio-economic status of residents of LSDPC's multifamily apartments in Lagos were as follows: low income (below ₦45,000.00); medium income (above ₦45,000.00 but below ₦100,000.00); and high income (above ₦100,000.00).

Methodology

Samples Collection

Case study approach: A case study approach was adopted to provide in-depth details for objective interpretation of crowding in LSDPC's multifamily apartments. The methodological issues attached to the case study were substantially based on survey research design. Gerring (2007) had noted that a case study encourages an in-depth investigation of specific issues within a research subject.

Three housing estates containing sixty-five percent of multifamily housing units were purposively selected from the low-income category, while one housing estate containing forty percent of multifamily housing units was purposively selected from the medium-income category for in-depth study. The three low-income estates selected were: (1) Abesan (4,272 apartment units), (2) Iba (2,388 apartment units) and (3) Dolphin II (576 apartment units). The medium-income estate chosen was Ebute-Metta (528 apartment units).

As earlier stated, the objectives of this study focus on crowding in LSDPC's low and medium income multifamily apartments. The population for this study was 7,764 comprising two-bedroom, three-bedroom and four-bedroom apartments. This represents the total number of housing units in the four selected estates. In all, a 7.5% sample of the housing units was chosen for this study, amounting to 582 units. This large sample was chosen based on the argument that as the sample size increases, sampling error reduces (MacCallum *et al,* 1999).

Stratification and systematic techniques were applied in the identification and selection of housing unit design types available in each estate. These housing types were classified according to Number of Bedrooms. The stratification technique was also used to delineate the housing unit types according to the proportion in each estate and ensured that all population proportions were matched in the sample. The housing units eventually chosen for detailed survey were selected using systematic random sampling technique after the first apartment was chosen at random.

The measure of crowding was constructed from responses to pre-tested questionnaire items pertaining to the number of persons in each housing unit. The questionnaire instrument was also used to collect other demographic data of occupants, such as age, sex, marital status, and income. To overcome questionnaire response difficulties, total personal income of household head was collected as an income range rather than an actual income figure. Each household head belongs to one of three groups (i) low-income [Less than ₦45,000.00] (ii) medium-income [₦45,000.00 and above, but less than ₦100,000.00] (iii) high-income [₦100,000.00 and above]. For the purpose of estimating housing space needs, this study measured the average number of persons per housing unit prototypes selected for this research.

Procedure for data analysis: The Canadian National Occupancy Standard and the Equivalized Crowding Index were used in computing what constitutes an adult-equivalent occupant. In applying these indexes, each individual who is in a marital relationship is rated as one-half. Children under one year are disregarded. Children one year of age or over, but less than eighteen years of age are counted as one-half. Household members aged eighteen years or over are counted as one. The outcome gives an equivalized number of people living in an apartment (Morrison, 1994; Basavarajappa, 1996; Schuluter *et al*, 2007; Australian Bureau

of Statistics year book 2008; Seeling *et al.*, 2008; Iweka *et al.*, 2009; Iweka, 2012).

Result and Discussion

The results were analyzed using descriptive statistics, involving data grouping, computation of frequencies and percentages. The total effective return rate of the questionnaire was 30.2% (176). Eleven out of all returned questionnaires could not be used in the data analysis because they were incomplete, or illegible. The most frequently reported (n =70, 42.4%) household income level was the (₦100,000.00 and above category). Forty percent (61) of the respondents reported their monthly household income as above ₦45,000.00 but below ₦100,000.00 per month. The least number of respondents 20.6% (34) indicated that they earn below ₦45,000.00 per month.

By concept and nomenclature, all the apartment types covered in this study were designed for low-income and medium-income residents. Theoretically, only respondents living in Type 6 apartments at Ebute-Metta were supposed to belong to the medium income group. This constitutes only 18.5% (33) of the total number of respondents. The rest 81.5% (145) were expected to be low-income earners. None of the respondents was supposed to belong to the high income group.

Table 1 Socio-Economic Group

Socio-economic income category	No of Respondents	Percentage (%)
Low-income (Below ₦45,000.00 per month)	34	20.6
Medium-income (Above ₦45,000.00 but below ₦100,000.00 per month)	61	40.0
High-income (₦100,000.00 & above per month)	70	42.4
Total	165	100.0

Note: eleven of the study participants did not provide data for the variable household income.

The data from Table 1, however, reveals that contrary to expectation, only 20.6% (34) of the respondents were actually low-income while 79.4% were in the medium-income, and high-income household categories, spread among the six apartment types investigated. This reality is contrary to expectation. The fact that high-income persons are now living in these apartments indicates that gentrification has taken place. The implications are far reaching because policies targeted towards low income urban residents will end up largely with the medium and high income groups. One of the likely explanations is scarcity of the right type of accommodation, thereby escalating the resort to gentrification.

Figure 2 indicates the outcome of crowding measurements for the six apartments covered in this research. As shown, all the six apartment types investigated in this study harbour persons belonging to the three groups of income classification. The figure also shows that in each of the 2-bedroom low-income apartment types investigated, the crowding level for low-income households is less than that of medium-income households. Ordinarily, crowding rates are expected to be higher in Low-income households than in medium-income household. Results shown in Figure 2 disprove this assumption, as low-income households occupying 2-bedrooms appear to have fewer numbers of occupants than medium-income households.

On the other hand, the crowding experiences in the 3-bedroom low income typology follow theoretical propositions. Low-income households are more crowded than medium-income households. This result tends to support the generally held perception that the number of persons in high-income households are fewer than in low and medium income households. The result from figure 2 further indicates that the occupancy levels among various apartment classifications are not substantially different.

Statistical validation of effect of socio-economic status on crowding: The data on Table 2 shows the results of chi-square test to establish the effect of socio-economic status of respondents on crowding. It was observed that socio-economic status had no significant effect

on crowding in all the apartment types investigated, at 95% confidence level.

The general understanding in urban housing studies is that crowding rates are higher in Low-income households than in medium-income household. It is also taken for granted that crowding rates in medium-income households are higher than in high-income households.

Results from the present study are not consistent with this assertion. This tended to be true, irrespective of whether the apartment was two-bedroom, three-bedroom or four-bedroom. The results contradict the claim in New Zealand that overcrowding is a feature of poverty, because affordability limits families' ability to set up new households (Statistics New Zealand, n.d.). It is difficult, however, to wholesomely compare the results of the two studies because the present one is focussed on public housing while the previous was concerned with households in private occupied apartments.

It may be argued that the social character of settlements such as the slums in Lagos might pose some difficulty in making comparative analysis with the findings from this study

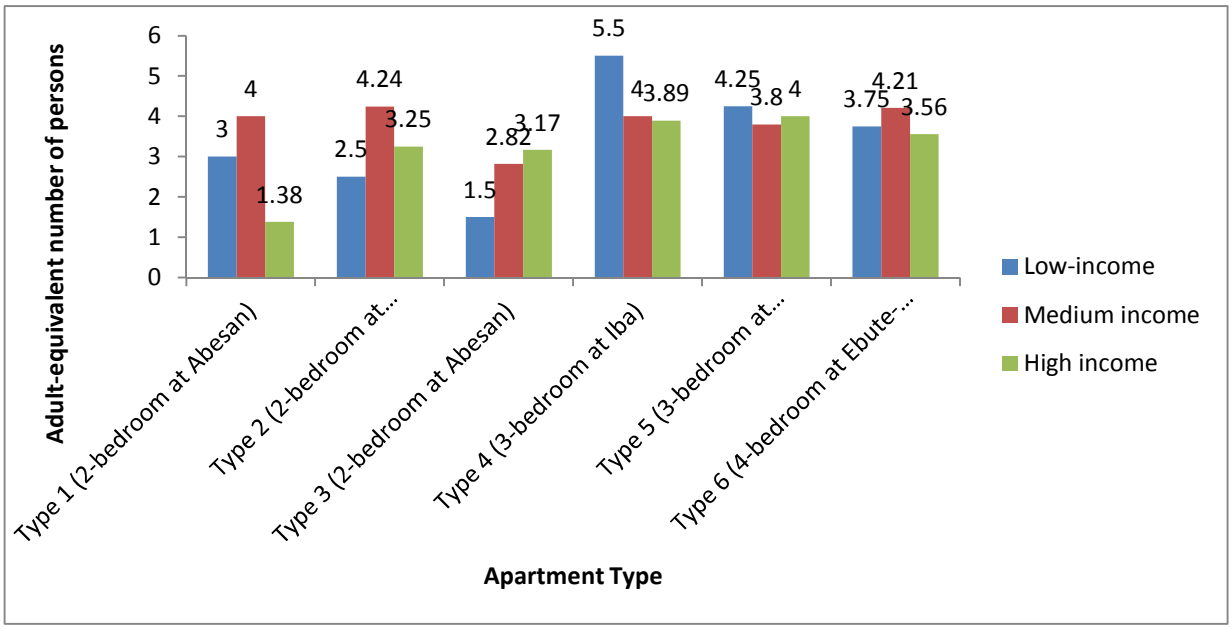

Figure 2 Apartment classification and crowding level

Table 2 Effect of Socio-Economic Status on crowding

Apartment type	**Chi-square Value**	**P-Value**	**Remark**
Type 1 (2-bedroom), Abesan	4.092	0.394	Income has no Significant effect on dwelling density in all apartment types at 95% confidence level.
Type 2 (2-bedroom), Dolphin	4.320	0.364	
Type 3 (3-bedroom), Abesan;	1.493	0.828	
Type 4 (3-bedroom), Iba	8.389	0.078	
Type 5 (3-bedroom), Dolphin	2.831	0.586	
Type 6 (4-bedroom), Ebute-Metta	3.376	0.497	

Conclusion and Recommendation

This study revealed that low-income apartments harboured more medium-income and high-income households. Similarly, the medium-income apartments harboured more high-income households. This is critical for policy formulation. The suspicion is that either the initial low-income occupants have now grown to higher levels, or they have moved away to neighbourhoods of lower socio-economic

designation. The social implications are enormous, because policies targeted towards low income urban residents will end up largely with the medium and high income groups. One of the likely explanations was scarcity of the right type of accommodation, thereby escalating the resort to gentrification. This tends to suggest that LSDPC must take initiatives to forestall the disappearance of low-income households from its multifamily apartments.

The study further revealed that income status of household head had no significant effect on the intensity of crowding. It is therefore important for LSDPC to realize that income status of household head is not a strong factor in predicting the likely level of crowding in its multifamily apartments. Therefore raising the levels of income of household heads is unlikely to enhance occupancy outcome. The mix of income level of household heads found in this research was contrary to theoretical propositions, suggesting a high preponderance of gentrification in all the apartment types investigated.

References

Australian Bureau of Statistics (2008), Housing utilization. Year Book Australia, 2008.

Basavarajappa , K. G. (1998). *Living arrangements and residential overcrowding: The situation of older immigrants in Canada 1991*. The Analytical Studies Branch Research paper Series No. 115, Statistics Canada, September.

Boehm, T. P. and McKenzie, J. A. (1982), Inflation, taxes, and the demand for housing. *American Real Estate and Economics Association Journal*, *1,* 25 – 38.

Bogdon, A. S. and Can, A. (1997), Indicators of local housing affordability: Comparative and spatial approaches. *Real Estate Economics, 25*(1), 43–80.

Fadare, W. and Alade, W. (2009), *Determinants of households' trip Generation in Lagos metropolis.* Proceedings of the 3rd International Conference on Built Environment in Developing Countries, Universiti Sains Malaysia, Penang, Malaysia, 2, 1159-1169.

George, C.K. (2008), *Centres: The Lagos mega-city situation – A town planners perspective* . Proceedings of the Conference on Architecture and the Nigerian Development Agenda organized by Architects Registration Council of Nigeria, 1st-3rd April. 35–56.

Gerring, J. (2007), *Case study research: Principles and practices.* New York: Cambridge University Press.

Illesanmi, A. O. and Adebamowo, M. A. (2009), The legacy and challenge of public housing provision in Lagos, Nigeria. *Proceedings of University of Glasgow and International Sociological Association (ISA) Conference* (62-74). Glasgow, Scotland: University of Glasgow.

Immerwahr, D. (2007). The politics of Architecture and Urbanism in Post colonial Lagos, 1960-1986. *Journal of African Cultural Studies,* 19(2).

Iweka, A. C. O. (2012), A post-occupancy evaluation of dwelling density in multifamily apartments in public housing estates in Lagos (Unpublished doctoral dissertation). University of Lagos.

Iweka, A. C. O., Adebayo, A. K. and Igwe, J. M. (2009), *Millennium development goals and slum alleviation in developing nations: The challenge of sufficient living area for households.* Paper presented at the International Conference on Millennium Development Goals and the Built Environment, Obafemi Awolowo University, Ile-Ife.

Le Roux, P. C., Kato, A. and Tsunekawa, K. (2005), A comparative study on building performance evaluation methodology. *Journal of Architecture, Planning and Environmental Engineering,* 589, 41-46.

Mabogunje, A.L. (2002), Re-Constructing the Nigerian city: The new policy of urban development and housing**.** In D. Amole, A. Ajayi, and A. Okewole, (Eds.), *The city in Nigeria: Perspectives, issues, challenges, strategies.* OAU, Ile-Ife, Nigeria.

MacCallum, R. C., Widaman, K. F., Zhang, S. and Hong, S. (1999), Sample size in factor analysis. *Psychological Methods*, 4, 84-89.

Mastor, S. H. and Ibrahim, N. (2010), *Building evaluation and feedback: A review of instruments*. Proceedings of the International Conference on Building Science and Engineering, Faculty of Civil and Environmental Engineering, Universiti Tun Hussein, Oun Malaysia (UTHM), Johor, Malaysia.

Morrison, P.S. (1994), Housing occupancy and the changing size of households and dwellings in New Zealand 1951 – 1991**.** *New Zealand Population Review,* 20(1 & 2), 32-64.

Ndubueze, O. J. (2009), *Urban housing affordability and housing policy dilemmas in Nigeria* (Unpublished doctoral dissertation). University of Birmingham. Birmingham.

Schluter, P., Carter, S. and Kokaua, J. (2007), Indices and perception of crowding in pacific households domicile within Auckland New Zealand: Findings from the pacific islands families study. *The New Zealand Medical Journal,* 120(1248), 1-12.

Seelig, T., Milligan, V., Phibbs, P. and Thompson, A. (2008), *Reconceptualizing housing need in the context of the 21st century Australian housing policy*. Retrieved October 10, 2010, from Australian Housing and Urban Research Institute Positioning paper (110) Web site: http://www.ahuri.edu.au/research_agenda_funding/ research_agenda/archived_research_agendas

Yuen, B., Yeh, A., Appold, S. J., Earl, G., Ting, J. and Kwee, L. K. (2006), High-rise living in Singapore public housing. *Urban Studies*, 43(3), 583–600.